December 28, 1951

Professor Franz Schrader
Department of Zoology
Columbia University
New York 27, New York

Dear Dr. Schrader:

In connection with the writing of a review on microbial symbioses, I have had an opportunity to become interested in the literature on the symbiotic intracellular flora of insects. Since Mrs. Schrader quoted your 1923 papers in a recent review, I may hope that you have continued an active interest in this problem.

May I ask whether you would care to express yourself on this point of embryology: Steinhaus (in his book on Insect Pathology) diagrams the mycetomes of various insects in a series that suggests a close phylogenetic and ontogenetic relationship to the gut. This is not unreasonable, except for your observations on Pseudococcus on the remarkable participation of the polar bodies. Do you think that Pseudococcus represents an exceptional case, or is the embryological derivation of the mycetocytes in controversy in insects generally?

As I am certainly not the first to observe, the "hereditary symbionts" pose many interesting possibilities to the geneticists, of which most of my colleagues do not seem to be aware. The story by Carter and Ito (Jour. Econ. Entomology 31: 291-298 1938) deserves special emphasis, if it is true. In P. brevipes, they seem to point to the symbionts as determinants of a bisexual as against parthenogenetic modes of reproduction. Does this seem reasonable to you?

With best wishes for the New Year,

Sincerely,

Joshua Lederberg

P.S. If your remarks may be quoted, and I may mention them in my review if pertinent, I would appreciate your so indicating. JL